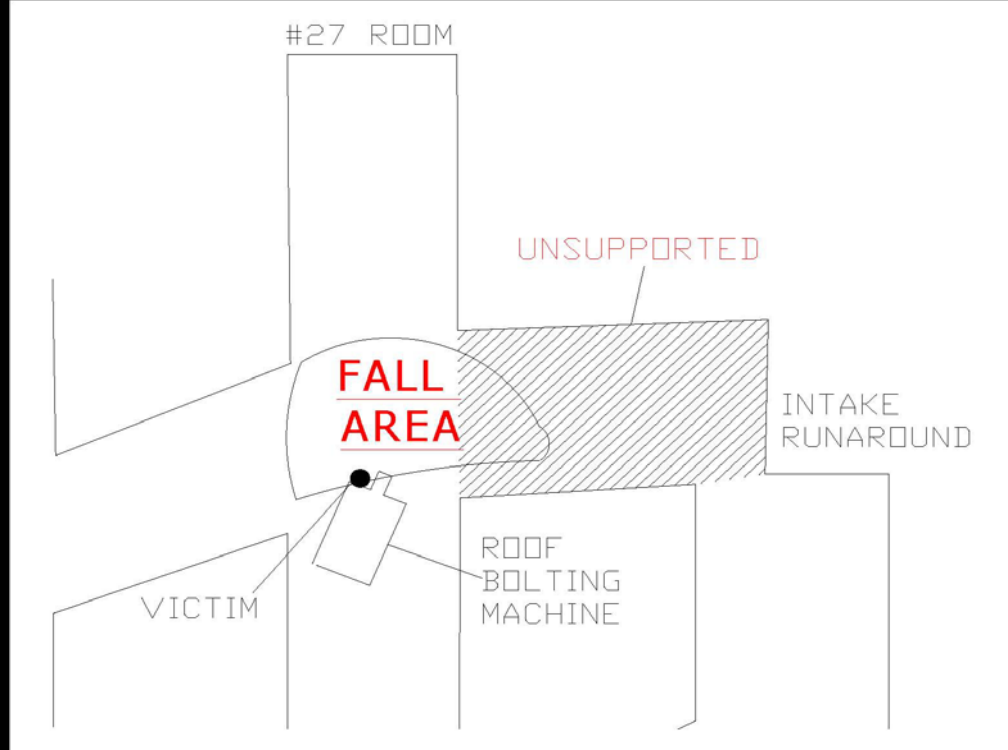


*This presentation is for illustrative and **general** educational purposes only and is not intended to substitute for the official MSHA Investigation Report analysis nor is it intended to provide the sole foundation, if any, for any related enforcement actions.*

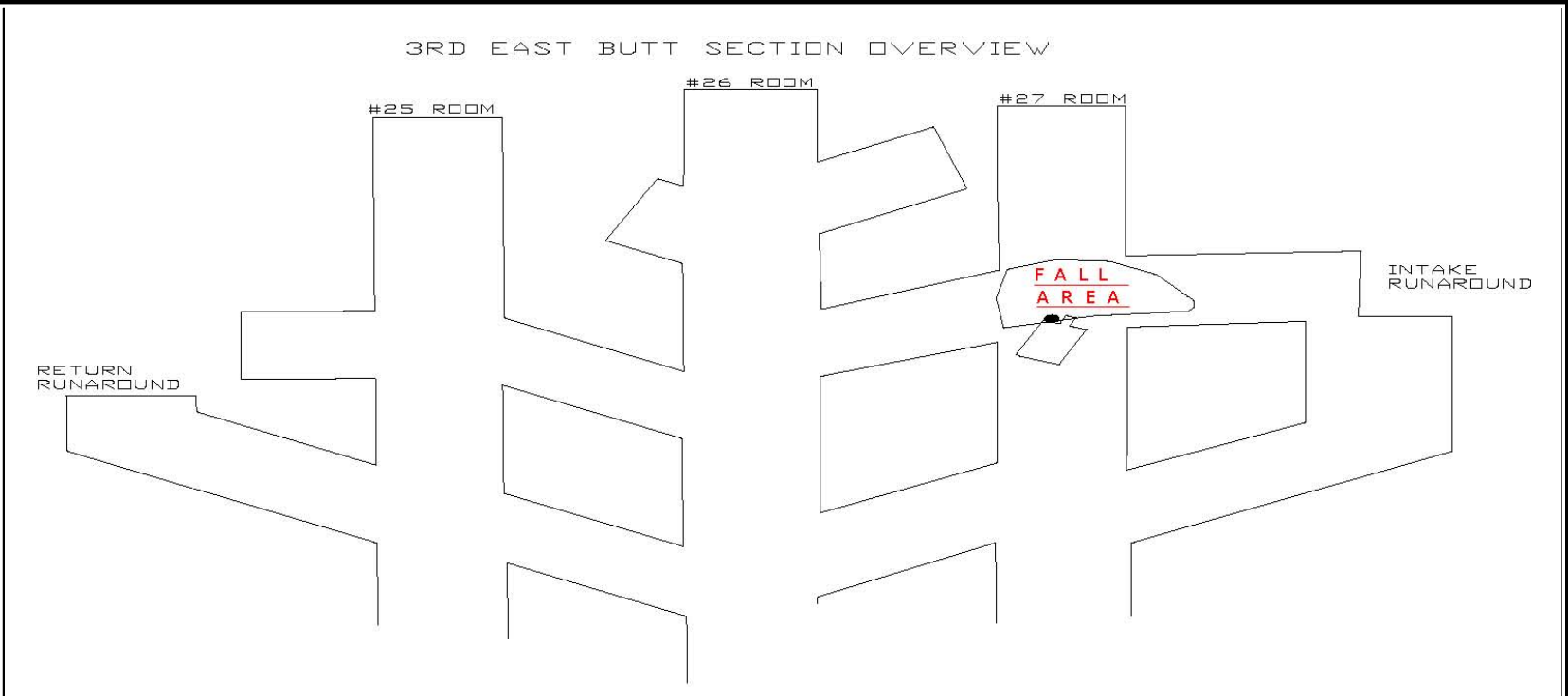
# GENERAL INFORMATION

## Coal Mine Fatal Accident 2005-09



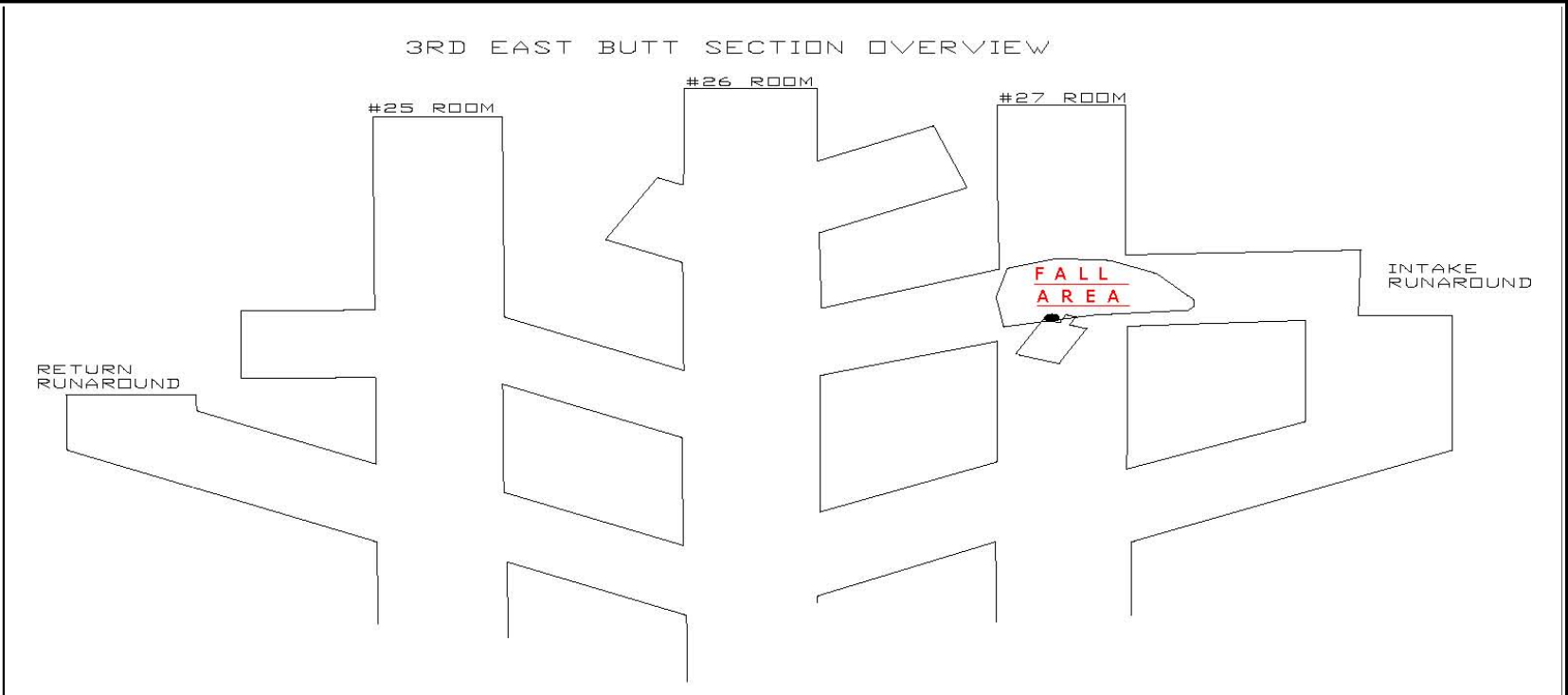
Operator:	Rosebud Mining Co
Mine:	Tracy Lynne
Accident Date:	June 10, 2005
Classification:	Roof fall
Location:	Dist. 2, Armstrong County, Pennsylvania
Mine Type:	Underground
Employment:	33
Production:	1,660 tons/day

# ACCIDENT DESCRIPTION



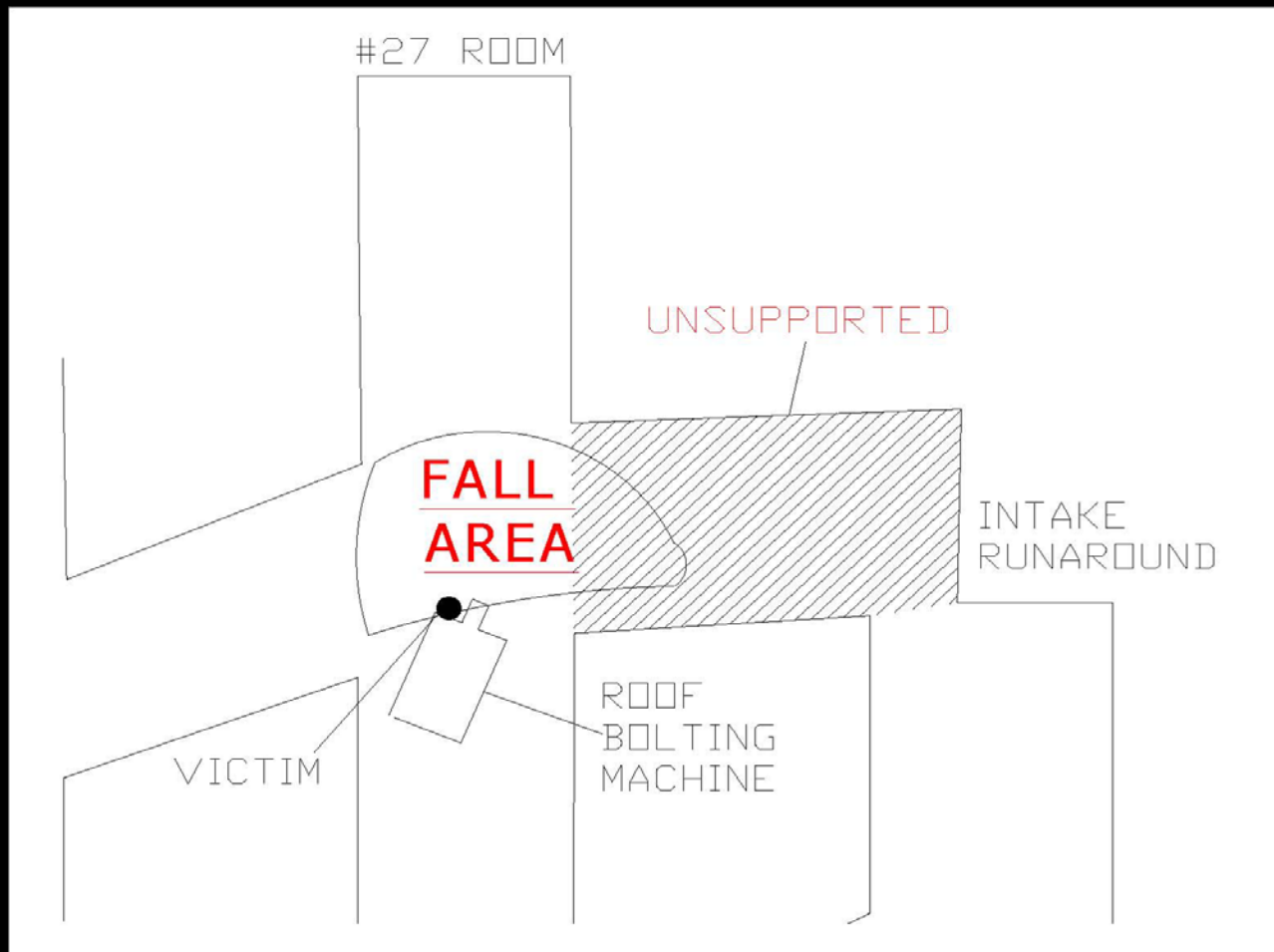
On June 10, 2005, the afternoon section foreman entered the mine at approximately 2:00 p.m., traveled to the section, and discussed general section conditions with the day shift section foreman. Everything was reported to be normal. The afternoon shift crew consisting of nine persons entered the mine at 2:30 p.m. While conducting routine examinations of the working section, the afternoon section foreman observed a defect in the roof strata in the No. 27 intersection. He tested the roof and checked an approximately 51 inch test hole and found no separations or indications of loose roof.

# ACCIDENT DESCRIPTION



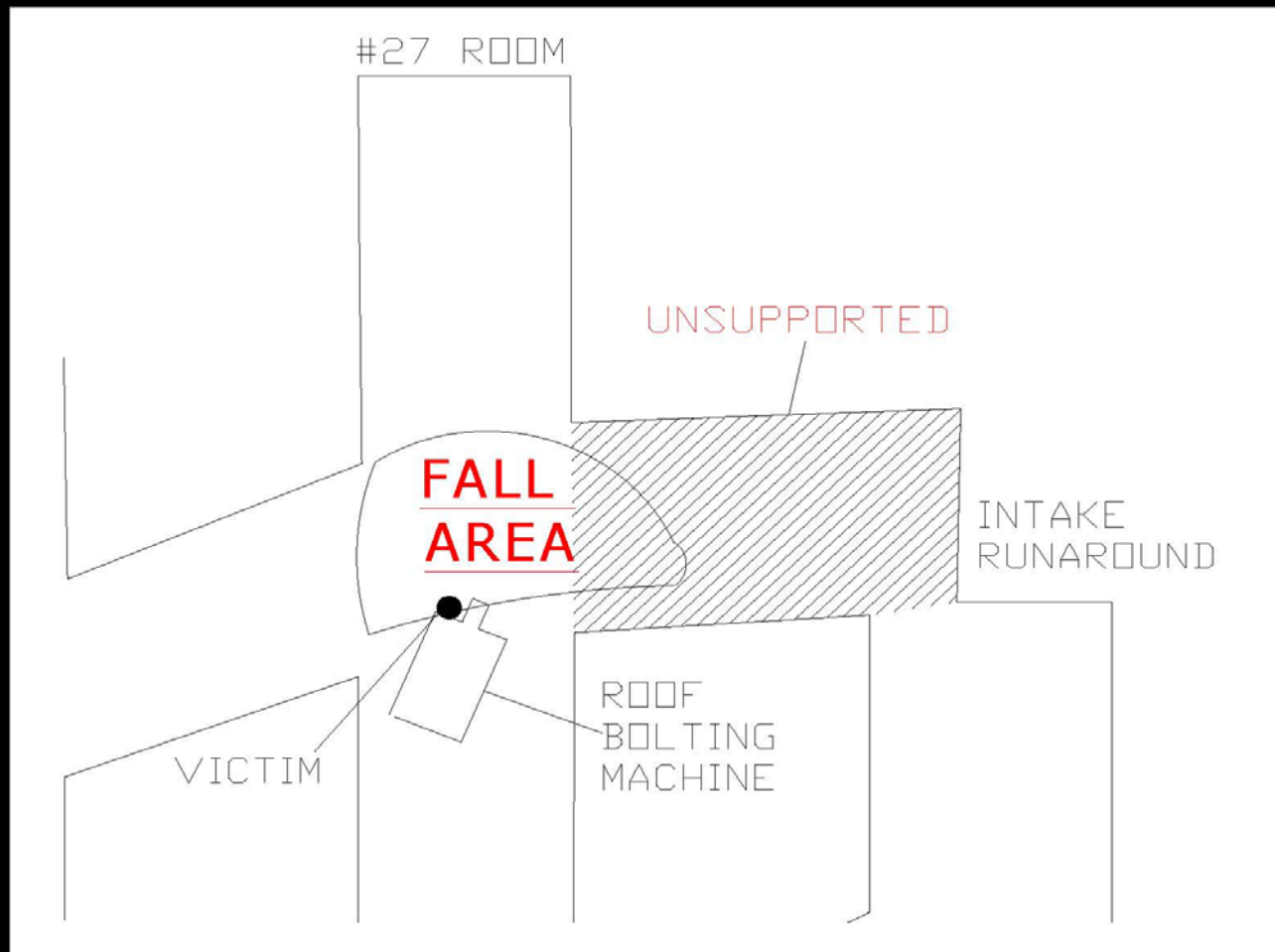
The crosscut from 27 Room to the intake runaround room was mined to a depth approximately 35 feet creating a 9-foot opening into the intake runaround. After mining was complete, the victim began to support the newly exposed roof using 36-inch resin grouted bolts. After installing three roof bolts, he reported to the section foreman that he had drilled a test hole in the No. 26 room (belt) and had detected a separation in the roof at approximately five feet in depth. The foreman instructed the victim to back up and start installing 6-foot bolts, which he did.

# ACCIDENT DESCRIPTION



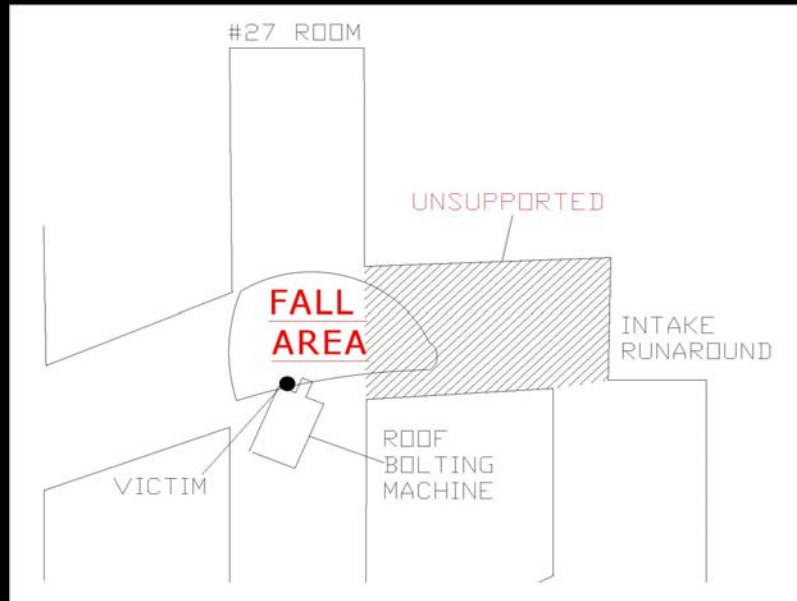
The foreman was in the No. 26 room when he heard a noise that sounded similar to the sudden dropping of a scoop bucket onto the mine floor. He immediately traveled to the intersection of the No. 27 room, where he discovered a roof fall that had fallen on the victim and had covered the front and left side of the roof bolting machine.

# DISCUSSION



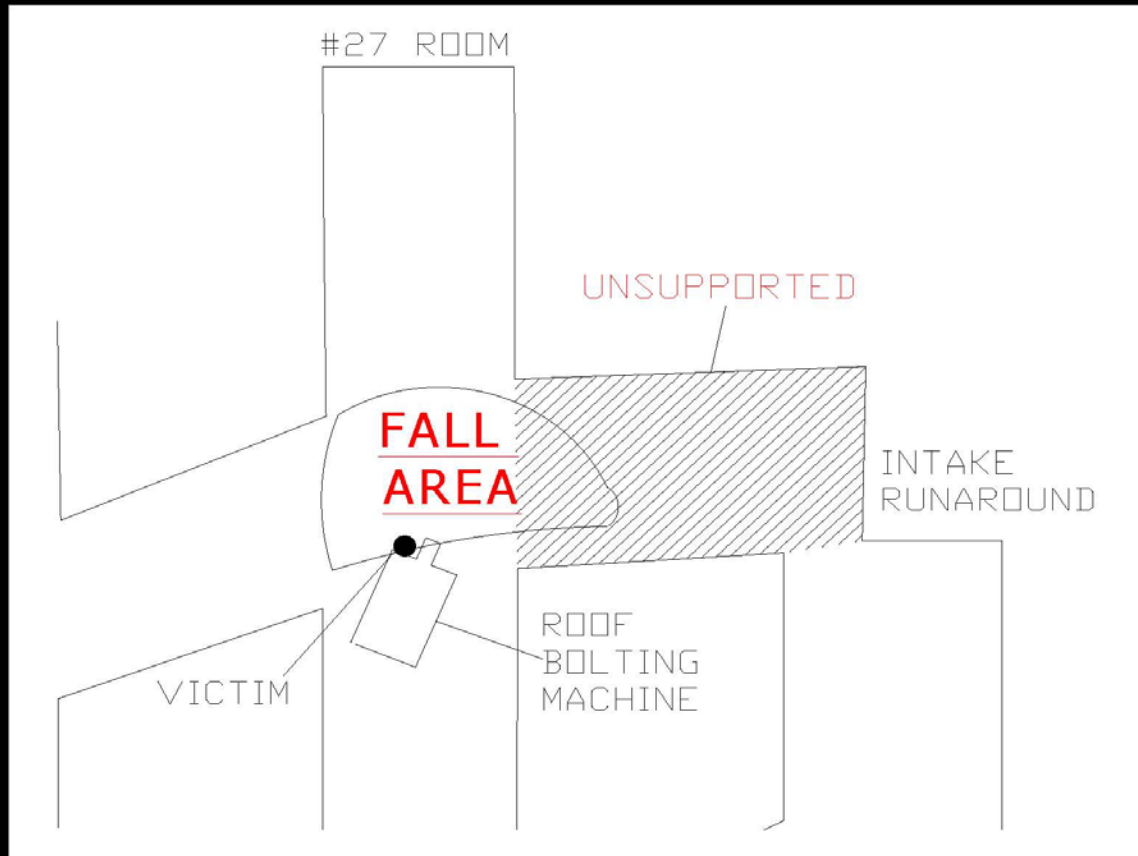
**METHOD OF MINING** - The section contained room centers of 65 feet, and crosscut centers of 60 feet, resulted in pillar sizes of roughly 45 feet by 40 feet. When the deep cut was mined approximately 35 feet in the crosscut from the No. 27 room intersection into the intake runaround room by the afternoon shift, a 4-way intersection was created.

# DISCUSSION



**GEOLOGIC CONDITIONS** - The immediate roof generally consisted of gray shale ranging in thickness to 20 feet. However, as observed in the general vicinity of the accident site, the roof fall was sharply defined by two intersecting slickenside zones. The first slickenside zone represents a "drag fold" that was traced across the entire mining section, from the intake runaround, through rooms 25-27. The 2nd slickenside zone represents a fault. Where the two zones intersect, a large wedge (commonly referred to as a horseback) was defined above the 27 room intersection. The roof fall cavity formed when the wedge dropped out of the roof onto the victim. The triangular-shaped wedge, was approximately 26 feet long, 15 feet to 13 feet in width, and from five feet to less than one foot in height. The roof fall material was estimated to weigh approximately 39 tons.

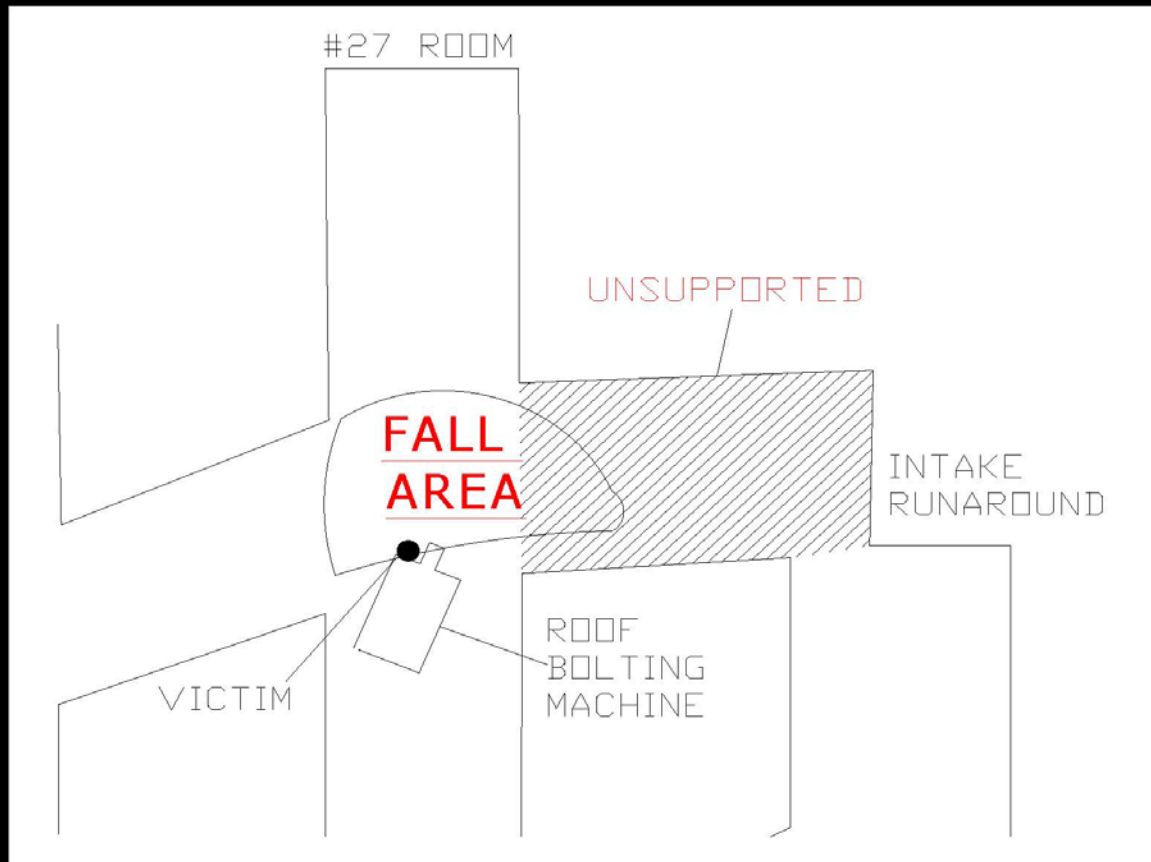
# DISCUSSION



**ROOF CONTROL PRACTICES** - The No. 27 room intersection (3-way) was originally mined by the daylight shift, on June 10, 2005. A visual roof defect was observed and a test hole drilled in the intersection which did not show any separations in the roof strata. The entire intersection was supported, utilizing 36-inch resin grouted roof bolts. The mine roof on the section was typically supported with 36-inch, fully grouted resin roof bolts, installed on a 4-foot crosswise by 4-foot lengthwise pattern.



# DISCUSSION



**ROOF CONTROL PRACTICES Continued** - Interviews with both day and afternoon shift production crew members indicated that a visual roof defect which was inconsistent with normal roof conditions was recognized in the Nos. 25, 26 and 27 Rooms which was generally similar in size and magnitude. The condition was recognized as an area that required additional precautions in the Nos. 25 and 26 Rooms based on the fact that 42 and 72-inch supplemental support roof bolts were installed and the depth of cut was limited.

# ROOT CAUSE ANALYSIS

*Causal Factor:* The standards, policies, and administrative controls in use at the mine did not ensure that supplemental roof supports were installed according to the approved roof control when a visual defect in the roof was evident.

*Corrective Action:* The roof control plan was reviewed and explained to all employees prior to mining being resumed. Special emphasis was placed on recognizing hazards and roof defects in the roof in conjunction with the importance of installing supplemental roof supports according to the approved roof control plan.

*Causal Factor:* The standards, policies, and administrative controls in use at the mine did not ensure that deep cuts were not taken off of areas where defective roof exists. A deep cut was taken from the 3-way intersection in No. 27 Room to the intake runaround which also created a 4-way intersection in the area of the roof defect.

*Corrective Action:* The roof control plan was reviewed and explained to all employees prior to mining being resumed. Special emphasis was also placed on the importance of limiting cut depth adjacent to areas with defective roof conditions.

# ROOT CAUSE ANALYSIS

*Causal Factor:* A review of examinations for hazardous roof conditions conducted prior to the accident on the 3rd East Butt Section indicated that hazardous conditions were not addressed or recorded in the preshift record book. An evident visual defect was present in the mine roof of the No. 27 Room intersection and this condition was not corrected or recorded to alert the oncoming shift foreman to hazardous conditions. The record could have prompted actions by mine management in response to the uncorrected hazardous condition.

*Corrective Action:* The certified persons making the examination should be trained to properly identify, make the appropriate corrections, and record all hazardous conditions. Mine management should develop and follow procedures to identify and correct any and all hazardous conditions and to notify all persons affected by the conditions.

# ENFORCEMENT ACTIONS

A 104 (d) (1) citation was issued for a violation of 30 CFR 75.220 (a) (1). Two (2) deep cuts, approximately 35 feet in depth, were mined off the No. 27 intersection where subnormal roof conditions were present. This subnormal roof had been observed by the day shift roof bolter operator and by the afternoon shift section foreman. The first deep cut was mined from this intersection into the straight of the No. 27 room by the day shift production crew. The second deep cut was mined from the intersection into the intake runaround room by the afternoon shift production crew. Safety Precaution No. 11, page 22 of the approved roof control plan, requires that "when subnormal or adverse roof conditions are encountered, the depth of the cut will be limited to 20 feet or less until roof conditions have improved to a point where extended cuts may be resumed. Two 20-foot cuts will be taken and permanently supported in good (normal) roof and the roof evaluated by the mine foreman or section foremen before extended cuts are resumed (predominate slips, cutters, or clay veins)."

# ENFORCEMENT ACTIONS Cont'd.

A 104 (d) (1) order was issued for a violation of 30 CFR 75.220 (a) (1). The operator did not comply with Safety Precaution No. 6, page 6 of the approved roof control plan. Subnormal roof (slip) had been previously noted by the day shift roof bolter operator and the afternoon shift section foreman in the accident site intersection of the No. 27 room, however, only 36-inch resin grouted roof bolts had been installed to support the roof. There was no supplemental roof support installed in this area. This safety precaution requires "in an area where a slip, cutter, or clay vein is evident, one bolthole shall be drilled 12 inches above the normal bolt length, to test for bed separation". Should a separation be detected, or if evident conditions warrant, supplemental supports such as longer bolts, J-beams, crossbars, posts, oversize bearing plates, channels, metal straps or cribs shall be installed. The additional supports shall start two rows of bolts outby in solid roof and shall continue for two rows of bolts inby in solid roof."

4. A 104 (d) (1) order was issued for a violation of 30 CFR 75.360. The preshift examination conducted on 6/10/2005 for the 2:30 p.m. afternoon shift in the 3rd East Butt working section (007) was inadequate. A visible defect was present in the mine roof in the intersection of the No. 27 room and supplemental roof support was not installed. The preshift examination record book located on the surface for this shift indicated no hazards or dangers reported for this working section.

# BEST PRACTICES

- Know and follow the approved roof control plan.
- Be alert to changing roof conditions at all times.
- Use proper support when adverse conditions are detected.
- Install and examine test holes regularly for changes in roof strata.